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| **Joint Collaborative Team on 3D Video Coding Extensions**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  9th Meeting: Sapporo, JP, 3 – 9 July 2014 | Document: JCT3V-J0048 |

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| *Title:* | **Restriction of bi-prediction for IvDC and IvDCShift** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Proposal | | |
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| *Source:* | LG Electronics | | |

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The newly added parts compared to 3D-HEVC working draft 3 are highlighted in green and the removed parts are marked with ~~strikethrough~~.

**I.8.5.3.2.11 Derivation process for inter-view merge candidates**

This process is not invoked when iv\_mv\_pred\_flag[ nuh\_layer\_id ] is equal to 0 and mpi\_flag[ nuh\_layer\_id ] is equal to 0.

Inputs to this process are:

* a luma location ( xPb, yPb ) of the top-left sample of the current luma prediction block relative to the top-left luma sample of the current picture,
* two variables nPbW and nPbH specifying the width and the height of the current luma prediction block,

Outputs of this process are (with X being 0 or 1, respectively)

* the availability flags availableFlagIvMC, availableFlagIvMCShift and availableFlagIvDC specifying whether the inter-view merge candidates are available,
* the reference indices refIdxLXIvMC, refIdxLXIvMCShift and refIdxLXIvDC,
* the prediction list utilization flags predFlagLXIvMC, predFlagLXIvMCShift and predFlagLXIvDC,
* the motion vectors mvLXIvMC, mvLXIvMCShift and mvLXIvDC.

The availability flags availableFlagIvMC, availableFlagIvMCShift and availableFlagIvDC are set equal to 0, and for X in the range of 0 to 1, inclusive, the variables predFlagLXIvMC, predFlagLXIvMCShift, predFlagLXIvDC are set equal to 0, the variables refIdxLXIvMC, refIdxLXIvMCShift and refIdxLXIvDC are set equal to −1, and both components of mvLXIvMC, mvLXIvMCShift and mvLXIvDC are set equal to 0.

When ic\_flag is equal to 0, the temporal inter-view motion vector merging candidate is derived by the following ordered steps.

* 1. Depending on PartMode, the following applies:
     + If dbbp\_flag[ xPb ][ yPb ] is equal to 0, the derivation process for inter layer predicted sub prediction block motion vector candidates as specified in subclause I.8.5.3.2.17 is invoked with the luma location ( xPb, yPb ), the variables nPbW and nPbH, the view order index RefViewIdx[ xPb ][ yPb ] and the disparity vector MvRefinedDisp[ xPb ][ yPb ] as inputs, and the outputs are, with X being in the range of 0 to 1, inclusive, the flag availableFlagLXIvMC, the motion vector mvLXIvMC and the reference index refIdxLXIvMC.
     + Otherwise (dbbp\_flag[ xPb ][ yPb ] is not equal to 0), the derivation process for a temporal inter-view motion vector candidate as specified in subclause I.8.5.3.2.12 is invoked with the luma location ( xPb, yPb ), the variables nPbW and nPbH, the prediction list indication X, the view order index RefViewIdx[ xPb ][ yPb ], and the disparity vector MvRefinedDisp[ xPb ][ yPb ] as inputs, and the outputs are the flag availableFlagLXIvMC, the motion vector mvLXIvMC and the reference index refIdxLXIvMC.
  2. The availability flag availableFlagIvMC, and the prediction utilization flags predFlagL0IvMC and predFlagL1IvMC are derived by
     + 1. availableFlagIvMC = availableFlagL0IvMC | | availableFlagL1IvMC (I‑129)
       2. predFlagL0IvMC = availableFlagL0IvMC (I‑130)
       3. predFlagL1IvMC = availableFlagL1IvMC (I‑131)

When DepthFlag is equal to 0 and ic\_flag is equal to 0, the shifted temporal inter-view motion vector merging candidate is derived by the following ordered steps.

* 1. For the prediction list indication X being 0 and 1 the following applies:
     + The derivation process for a temporal inter-view motion vector candidate as specified in subclause I.8.5.3.2.12 is invoked with the luma location ( xPb, yPb ), the variables nPbW and nPbH, the prediction list indication X, the view order index RefViewIdx[ xPb ][ yPb ], and the disparity vector MvRefinedDisp[ xPb ][ yPb ] + ( nPbW \*2 + 4, nPbH \*2 + 4 ) as inputs, and the outputs are the flag availableFlagLXIvMCShift, the motion vector mvLXIvMCShift and the reference index refIdxLXIvMCShift.
  2. The availability flag availableFlagIvMCShift, and the prediction utilization flags predFlagL0IvMCShift and predFlagL1IvMCShift are derived by
     + 1. availableFlagIvMCShift = availableFlagL0IvMCShift | | availableFlagL1IvMCShift (I‑132)
       2. predFlagL0IvMCShift = availableFlagL0IvMCShift (I‑133)
       3. predFlagL1IvMCShift = availableFlagL1IvMCShift (I‑134)

When DepthFlag is equal to 0, the disparity inter-view motion vector merging candidate is derived by the following ordered steps.

* 1. For the prediction list indication X being 0 and 1 the following applies:
     + When availableFlagIvDC is equal to 0, the following applies:
       - The derivation process for a disparity inter-view motion vector candidate as specified in subclause I.8.5.3.2.13 is invoked with the luma location ( xPb, yPb ), the variables nPbW and nPbH, the view order index RefViewIdx[ xPb ][ yPb ], the disparity vector MvRefinedDisp[ xPb ][ yPb ], and the prediction list indication X, as inputs, and the outputs are the flag ~~availableFlagLXIvDC~~availableFlagIvDC, the motion vector mvLXIvDC, and the reference index refIdxLXIvDC.
       - The prediction utilization flags predFlagLXIvDC is derived by
       1. predFlagLXIvDC = availableFlagIvDC (I‑136)
  2. ~~The availability flag availableFlagIvDC, and the prediction utilization flags predFlagL0IvDC and predFlagL1IvDC are derived by~~
     + 1. ~~availableFlagIvDC = availableFlagL0IvDC | | availableFlagL1IvDC  (‑135)~~
       2. ~~predFlagL0IvDC = availableFlagL0IvDC (‑136)~~
       3. ~~predFlagL1IvDC = availableFlagL1IvDC (‑137)~~